Remarks/Arguments

Status of the Claims

Claims 1-6, 8-16, 18-20, and 30-39 are pending in the application. All pending claims stand rejected. In this paper, Applicant has amended claims 1, 11, 30, and 31. For the reasons set forth below, Applicant submits that each of the pending claims, as proposed to be amended herein, is in condition for allowance. Reconsideration of the claims is therefore respectfully requested.

Claim Rejections - 35 U.S.C. § 103

Claims 1-6, 8-16, 18-20, and 30-39 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent Application Publication No. 2005/0289617 by Safadi et al. ("Safadi") in view of U.S. Patent No. 6,118,498 by Reitmeier ("Reitmeier"). As discussed below, Applicant respectfully traverses this rejection.

An aspect of the independent claims of the present application relates to decoding an audio/video stream from multiple sources (e.g., a television source and an IP source) using the same hardware decoder. Hardware decoders provide relatively high frame rates when compared to software decoding by general purpose microprocessors.

As stated on pages 2 and 3 of the present application, typical set-top-boxes (STBs) include DOCSIS cable modems to provide Internet access. By way of contrast with the present application, such STBs typically include a central processing unit (CPU) to provide software decoding of IP-based media streams, which limits the frame rate of

the displayed media stream and burdens the STB's CPU. As discussed in detail below, Applicant maintains that Safadi does not teach using the same hardware decoder to decode audio/video streams from both a television source and an IP source. Further, Reitmeier is silent as to signals received from an IP source. In particular, Safadi and Reitmeier fail to teach or suggest using a processor to extract an IP encapsulated media stream, and then selectively providing the extracted media stream to the same hardware decoder used to decode television signals from another source.

1. Safadi and Reitmeier, either individually or when combined, fail to teach or suggest using a processor to extract an IP encapsulated media stream, and then selectively providing the extracted media stream to the same hardware decoder used to decode television signals from another source.

As shown in FIG. 4 of the present application (reproduced below), the claimed invention includes a stream selector 304 that receives audio/video streams from two different paths.

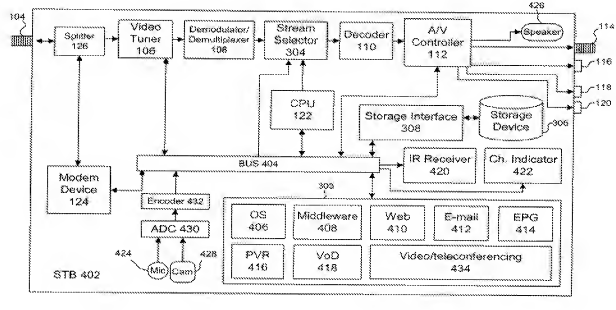

FIG. 4

The first path includes a first receiver (*e.g.*, video tuner 106 and demodulator/demultiplexer 108) coupled directly to a first input of the stream selector 304 such that the first audio/video stream is capable of passing directly from the first stream receiver to the first input of the stream selector. The second path includes a second receiver (e.g., modem device 124). As stated on page 10, lines 15-19 of the present application (emphasis added):

> The modem device 124 receives and demodulates the signal into a series of IP packets, from which the ***CPU 122 extracts a media stream***. The CPU 122 passes the media stream to the stream selector 304, and signals the stream selector 304 (via a select line) to ***pass the media stream to the decoder 110***.

Accordingly, claim 1 has been amended herein to clarify that the second audio/video stream received through the second stream receiver is extracted from IP encapsulated audio/video data by the processor before the second audio/video stream is provided to the stream selector. In particular, claim 1 has been amended to recite, among other things (emphasis added):

> a second stream receiver configured to receive a second audio/video stream from a second source, the second audio/video stream comprising Internet Protocol (IP) encapsulated audio/video data, and the second source comprising an IP source, wherein the second stream receiver is configured to communicate the IP encapsulated audio/video data through the communication bus to the processor, and wherein ***the processor is configured to extract the second audio video stream from the IP encapsulated audio video data***; and
>
> a stream selector, in addition to the communication bus and the processor, comprising first and second inputs, a select line, and an output, the first input coupled directly to the first stream receiver such that the first audio/video stream is capable of passing directly from the first stream receiver to the first input, the ***second input coupled to the communication bus so as to receive the extracted second audio/video stream***, the select line coupled to the processor, and the output coupled directly to the hardware decoder such that a selected output from the stream selector is capable of passing directly from the stream selector to the hardware decoder,
>
> … and

> wherein the hardware decoder is configured to decode the selected output from the stream selector so as to convert the first audio/video stream comprising the television signal and the ***second audio/video stream extracted from the IP encapsulated audio/video data*** from an originally compressed state as provided by the first source and the second source, respectively.

Similar limitations are found in independent claims 11, 30, and 31.

As discussed in detail below, Applicant respectfully submits that neither Safadi nor Reitmeier teaches or suggests using the same hardware decoder for both a first audio/video stream comprising a television signal from a first source and a second audio/visual stream comprising IP encapsulated audio/video data. Further, Safadi and Reitmeier fail to disclose the specifically claimed architecture that provides IP encapsulated audio/video data from the second stream receiver to the encoder so as to extract the second audio/video stream, but then (rather than using the processor to decode the second audio/video stream) provides the extracted second audio/video stream to the stream selector for selective decoding by the same hardware decoder that decodes the first audio/video stream comprising the television signal.

To the contrary, Safadi teaches using the CPU 104 to decode and otherwise process the information. See, *e.g.*, paragraph [0035] (indicating that the CPU 104 transcodes (discussed below) streaming audiovisual data and performs other functions such as playing and recording audiovisual programming using necessary player software).

Further, Reitmeier is completely silent as to receiving or processing IP encapsulated data. According to page 3 of the Office Action, Reitmeier "discloses a stream selector comprising first and second inputs, a select line and an output for two input streams selection for further decoding (FIG. 1, 40; Col 4 lines 43-49)." However,

Reitmeier is directed to masking program selection latency in an MPEG stream receiver. Col. 2, lines 14-17. Reitmeier masks the latency by using two tuners to store portions of different television channels during a scanning mode so that, during a channel changing mode, an I-frame of a desired channel can be retrieved and sent to a decoder while the desired channel is re-acquired by tuning, demodulating, and demultiplexing operations. Col. 2, lines 18-36. Both tuners are for television signals and Reitmeier is silent as to IP data. Accordingly, Reitmeier does not teach or suggest using a processor to extract an audio/video stream from IP encapsulated data, followed by providing the extracted data to a hardware decoder.

2. Safadi's reference to sharing resources such as decoders is unrelated to using a hardware decoder for IP-based audio/video streams.

Page 3 of the Office Action references paragraph [0019], lines 4-7 of Safadi, which states :

> The personal versatile recorder of the present invention is preferably integrated with a set-top terminal to share a common central processing unit; associated firmware and software, decoding and security elements, interfaces, etc.

However, Applicant asserts that the sharing contemplated by paragraph [0019] of Safadi refers to sharing resources when combining a personal versatile recorder (PVR) and a set-top box (STB), and is unrelated to the separate feature of receiving IP-based data through the internet. See paragraph [0019] (stating that the "personal versatile recorder of the present invention is preferably integrated with a set-top terminal to share," among other things, decoding). Combining a PVR and an STB will naturally lead to the sharing of certain resources. For example, separate PVRs and STBs would each include a decoder for decoding cable television signals. This cable television

signal decoder may be shared in the combined PVR/STB taught by Safadi to decode television signals. However, this alone does not teach or suggest that the same hardware decoder is used to decode both television signals and IP-based signals.

As discussed above, Reitmeier is silent as to IP-based signals.

3. Safadi teaches using a separate processor to "transcode" IP-based information from its ***original*** compressed state as provided by the second source.

Page 3 of the Office Action asserts that Safadi teaches using the decoder 103 to decode the selected output from the stream selector so as to convert the television signal and the IP encapsulated audio/video data from an originally compressed state as provided by the first source and the second source, respectively. Applicants respectfully disagree. While the cited portions of Safadi indicate the different operating modes ***at some point in the processing*** when both tuners 202, 203 are used, the cited portions are silent as to how the signal from the secondary tuner 203 is converted from its originally compressed state. For this information, the entire Safadi reference must be considered as a whole.

Safadi teaches in paragraph [0020] that the "recorder may also include ***co-processors (e.g., encoding and decoding devices)***. The central processing unit… selectively controls the encoding, ***transcoding***," and other functions. (Emphasis added). See also, paragraph [0035], lines 17-24 (indicating that one of the functions of the central processing unit (104) is for "transcoding streaming audiovisual data").

Paragraph [0064] of Safadi provides an explanation for what is meant by transcoding, and states in part (emphasis added):

> Another function performed by the personal versatile recorder of the present invention is called transcoding. ***When audiovisual***

> ***programming is streamed*** to the recorder from, for example, the ***internet***, the data of the audiovisual programming is compressed to facilitate transmission. The data ***must*** be ***decompressed for optimal display*** and compressed for storage on the disk (106). The compression and decompression of multimedia data is ***performed by the central processing unit (104)*** and is known as transcoding.

Thus, Safadi teaches that the ***originally compressed state*** of the streaming audiovisual programming (e.g., in the format in which it is received through the internet) is decoded by the central processing unit (CPU) 104 for display and storage.

While paragraphs [0042]-[0047] of Safadi indicate that the secondary tuner 203 may be used in conjunction with the primary tuner 202 to simultaneously watch two different television channels or audiovisual data streams in a picture-in-picture mode, there is nothing in these paragraphs to indicated that data from an IP source, in its originally compressed state, is provided to the decoder 103. Paragraph [0047] indicates that a decrypted MPEG-2 signal is processed by the decoder 103 so that it can be watched. However, there is no indication that this MPEG-2 stream came from the secondary tuner 203 rather than the primary tuner 202, or that it is not first processed by the CPU 104. Indeed, as discussed above, all references to programming that is streamed through the internet must first be decompressed by the CPU 104.

Paragraph [0049] of Safadi states that if "the audiovisual data is streamed, e.g., web-cast, recording that data on the disk (106) may be done for caching purposes." However, this sentence goes on to indicate that storing the web-cast may be done for caching purposes so that it can be subsequently used ***by application software*** on a dynamic basis. Further, while paragraph [0049] indicates that "the audiovisual signal recorded on the disk (106) can be retrieved and processed through the audio/video decoder (103), paragraph [0064] makes it clear that IP-based data is first

decompressed through transcoding before it is stored on the disk (106), as discussed above. Thus, the hardware decoder (103) does not decode it from its ***originally compressed state*** as provided through the internet.

Safadi specifically teaches that programming received through the primary tuner 202 is sent through the decoder 103. For example, referring only to the primary tuner 202, paragraph [0038] indicates that the "programming can also be decoded through the audio/video decoder (103)." However, Safadi provides no such teaching for IP-based signals received through the DOCSIS tuner 203.

Thus, Safadi fails to teach or suggest:

> wherein the hardware decoder is configured to decode the selected output from the stream selector so as to convert the first audio/video stream comprising the television signal and the second audio/video stream extracted from the IP encapsulated audio/video data from an ***originally compressed state*** as provided by the first source and the second source, respectively

as recited, among other things, in amended claim 1. (Emphasis added). Similar limitations are also found in the other independent claims.

Conclusion

For at least the foregoing reasons, the cited prior art references, whether considered individually or in combination, fail to disclose each of the limitations in any of the pending independent claims. For at least the same reasons, each of the claims depending therefrom are also patentably distinct from the cited prior art.

In view of the foregoing, all pending claims represent patentable subject matter. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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